REMARKS/ARGUMENTS

Thirty claims, including four independent claims, were paid for in the application. Claims 1-23 have been cancelled. Claims 26-28 have been amended to correct a typographical error. No new claims have been added. No new matter has been added to the application. No fee for additional claims is due by way of this Amendment. The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090. Claims 24-30 are pending.

Election/Restrictions

During a telephone conversation with the Examiner on April 12, 2007, Applicants elected without traverse to prosecute the invention of Group III, claims 24-30.

In view of the above election, Applicants hereby cancel claims 1-23 without prejudice to the filing of any divisional, continuation, or continuation-in-part application.

Rejections Under 35 U.S.C. § 103

Claims 24-30 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over US 6,294,063 to Becker et al. (hereinafter Becker) and US 7,156,315 to Seul et al. (hereinafter Seul). Claims 24-30 were also rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over US 6,565,727 to Shenderov (hereinafter Shenderov) in light of Becker and Seul.

Becker is directed to a method and apparatus for programmable fluidic processing. Becker, Abstract, col. 1, lines 6-9. In particular, Becker provides for programmably manipulating a packet of material. Becker, Abstract; col. 2, line 53-col.3, line 15. The position of the packet is sensed with a position sensor. Becker, Abstract. A programmable manipulation force is applied to the packet to move the packet along arbitrarily chosen paths. Becker, Abstract.

Becker packet refers to a compartmentalized matter, for example a fluid packet, an encapsulated packet or a solid packet. Becker, col. 2, line 53-col.3, line 15. A fluid packet refers to a droplet or bubble of liquid or gas. Becker, col. 2, lines 56-59. An example of a fluid

packet is a droplet of aqueous solution suspended in oil. Becker, col. 2, lines 63-64. While packets may vary greatly in size, the various embodiments employ packets with diameters between 100nm and about 1 cm. Becker, col. 3, lines 13-15.

Becker teaches manipulation of the packet on a reaction surface via dielectrophoretic force, electrophoretic force, optical force, mechanical force or combination thereof. Becker, col. 3, lines 44-46. Becker further teaches a microfluidic apparatus to manipulate packets which includes an array of driving electrodes and an array of impedance sensing electrodes. Becker, col. 3, lines 52-60. The apparatus includes reaction sites as well as inlet and outlet ports. Becker, col. 3, line 60-col. 4, line 19; col. 12, line 42-col. 13, line 28.

Becker teaches that the position sensor may take the form of a conductor configured to measure an electrical impedance of a packet or an optical system configured to monitor the position of a packet. impedance or dielectric position sensors. Becker, col. 3, lines 46-50; col. 8, lines 6-24; and Figures 3 and 10.

Seul is directed to methods and interactive control over creation and placement of planar arrays of particles and biomolecules and the manipulation of array shape and size. Seul, Abstract. In particular, Seul is directed to manipulating particles in colloidal suspension. Seul, Abstract; col. 6, line 32-col. 7, line 5; col. 7, lines 40-48 and line 57-col. 8, line 2. Such may be used to create particle based displays among other applications. Seul, col. 18, line30-col. 19, line 33.

The colloidal particles in suspension are carried on an electrode (*i.e.*, an electrolyte-insulator-semiconducor or EIS). Seul, Abstract; col. 7, line 20-25. Seul appears to teach the use of a single electrode with a uniform potential applied to the entire electrode. Seul, Abstract. The electrode may have different regions formed by patterning to provide spatial control of the colloidal particles in suspension. Seul, Abstract; col. 6, lines 11-13; col. 6, lines 41-63; col. 10, line 21-col. 12, line 4. Seul teaches the use of illumination to provide for real time manipulation of the colloidal particles in suspension on the electrode. Seul, Abstract; col. 7, line 20-col. 8, line 2; col. 12, line 4-col. 13, line 31. In particular, graphical design or drawing software may be used to control an LCD panels to selectively produce time varying patterns of illumination on the electrode. Seul, Abstract, col. 7, line 26-col. 8, line 2. The patterns of

illumination produce varying impedance across the electrode. Seul, Abstract col. 7, line 26-col. 8, line 2; and col. 12, line 4-col. 13, line 31; col. 20, lines 46-54.

Becker and Seul address fundamentally different problems in fundamental different ways, and there appears to be no reason to believe that certain teachings of one may be successfully applied to the other. For example, while Becker is directed to tracking and moving packets, in contrast Seul is directed to moving colloidal particles in suspension. While Becker teaches the use of an array of electrodes, Seul appears to teach a single electrode. While Becker teaches application of different potentials to each of the electrodes to produce movement of the packet, Seul teaches time varying illumination of areas of the electrode to produce movement of the particles in suspension. While Becker uses feedback from position sensors to directly control the array of electrodes, Seul teaches the use of software by a user to control an LCD to selectively illuminate portions of an electrode.

Shenderov is directed to actuators for moving microfluidic liquids without moving parts. Shenderov, Abstract. In particular, Shenderov teaches that a force acting on a small volume of liquid is a potential-dependent gradient of adhesion energy between the liquid and a solid insulating surface. Shenderov, Abstract; col. 1, lines 10-18. A material handing device transports liquid in the form of individual droplets positioned between two substantially parallel flat surfaces. Shenderov, col. 2, lines 18-25. Movement is controlled by controlling applied voltages to a plurality of electrodes positioned on the opposite sides of the gap formed between the two surfaces. Shenderov, col. 2, lines 26-34. The gap is filled with a filler fluid that is immiscible with respect to the liquids to be manipulated. Shenderov, col. 2, lines 35-36. Thus, Shenderov addresses the same problems as Becker, which as noted above, are fundamentally different than Seul.

Claim 1 recites, *inter alia*, "determining a position of a cursor on a display; receiving a first user selection; identifying at least one of a position and a number of fluid bodies based on the position of the cursor in response to receiving the first user selection; and producing at least one instruction for driving at least one of a number of drive electrodes and a number of ground electrodes based on the identification."

In rejecting claim 24, the Office Action notes that Becker does not discloses (a) determining a position of a cursor on a display, (b) identifying at least one of a position and a

number of fluid bodies based on the position of the cursor in response to receiving the first user selection, and (c) producing at least one instruction for driving at least one of number of drive electrodes and a number of ground electrodes based on the identification, although Becker discloses identifying the position of a fluid body and generating an electrical manipulation force to move the fluid body as desired. Office Action, page 6. The Office Action also notes that Seul discloses a method of manipulating colloidal particulates using electrodes using a mouse that is a cursor to drag and drop particulates or create and store a trajectory for some particulates. The Office Action then concludes that it would have been obvious to modify the teachings of Becker to allow the path of the fluid body to be set with a cursor as taught by Seul. Applicants respectfully disagree.

Becker appears to be principally directed to an automated feedback system, where the controller automatically updates the drive signals to the electrodes of the array based on position data. Typically, one of ordinary skill in the art is motivated to automated manual processes rather than providing a more manual system where a highly automated system exists. Thus, Becker appears to teach away from the proposed modification.

Even if motivated, the teachings would require significant modification to work successfully, if at all. For example, the software of Seul appears designed to drive an LCD panel to emit time-varying illumination patterns on an electrode structure. Such an approach is fundamentally different from directly controlling individual electrodes of an array of electrodes, such as taught by Becker and Shenderov. The software of Seul is directed to controlling particles in a colloidal suspension. Thus, while the software of Seul may be suitable for controlling particles in a fluid body, such is fundamentally different than controlling fluid bodies themselves as taught by Becker and Shenderov. In particular, the software of Seul produces illumination patterns to vary an impedance of portions of an electrode. There is no reason to equate such with application of electrical potentials, let alone the direct application of electrical potentials to individual electrodes of an array of electrodes as taught by Becker and Shenderov. Additionally, even if the software and LCD structure taught by Seul were appropriate to controlling an electrode, there is no teaching, motivation or suggestion for controlling both a drive electrode and a ground electrode as taught by Becker or electrodes opposed across a gap as taught by Shenderov. The Office Action does not provide any suggestion as to how the

illumination based system of Seul would be modified to handle two types of electrodes, one of which may not even be exposed so could not be illuminated. The lack of such a teaching, motivation or suggestion with respect to the control of two types of electrodes underscores the fundamental difference in technologies between Seul and Becker or Shenderov. Again, Becker and Shenerov are directed to control of fluid bodies while Seul is directed to control of colloidal particles.

In this regard, Applicants further contends that Seul is non-analogous art with respect to Becker and Shenderov. As explained above, Becker is directed to a device that manipulates packets (*e.g.* fluid bodies) while Seul is directed to a device that manipulates particles in a colloidal suspension. Applicants contends that, even if the defect in Becker (*e.g.*, failure to teach (a) determining a position of a cursor on a display, (b) identifying at least one of a position and a number of fluid bodies based on the position of the cursor in response to receiving the first user selection, and (c) producing at least one instruction for driving at least one of number of drive electrodes and a number of ground electrodes based on the identification), were remedied by Seul, it would not have been obvious to a person of ordinary skill in the art to have looked to Seul to overcome this defect.

Claims 25-30 depend directly from claim 24 and contain all features and elements of claim 24. Applicants contends that, in view of the above remarks concerning claim 24, the rejection of claims 24-30 has been overcome.

In view of these remarks and the amendments to the claims, Applicants respectfully requests reconsideration of this ground for rejection of claims 24-30.

Conclusion

Overall, the cited references do not singly, or in any motivated combination, teach or suggest the claimed features of the embodiments recited in independent claim 24, and thus such claim is allowable. Because the remaining claims depend from the allowable independent claim, and also because they include additional limitations, such claims are likewise allowable. If the undersigned attorney has overlooked a relevant teaching in any of the references, the Examiner is requested to point out specifically where such teaching may be found.

In light of the above amendments and remarks, Applicants respectfully submit that all pending claims are allowable. Applicants, therefore, respectfully request that the Examiner reconsider this application and timely allow all pending claims. Examiner Vestal is encouraged to contact the undersigned by telephone to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, she is encouraged to contact the undersigned by telephone (206) 622-4900 to expediently correct such informalities.

Respectfully submitted,

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